From: Greg Hill [greghill1000@gmail.com]
Sent: Tuesday, March 20, 2012 7:07 PM
To: SCL_CLRPquestions
Subject: Electric Rate Reform
Attachments: Marginal Cost Rate Alternatives June 24, 2009-1.doc

Dear Citizen Review Panel,

I've attached a paper that describes a number of electric rate reforms, which, together, would reduce City Light's long-run energy costs, decrease greenhouse gas emissions, and result in a fairer allocation of the utility's total costs.

I hope the paper is useful to you as you deliberate City Light's future.

Best regards, Greg Hill
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Designing Electric Rates to Promote Conservation, Improve Resource Efficiency, and Reduce Greenhouse Gas Emissions

Greg Hill

March 20, 2012

EXECUTIVE SUMMARY

There is widespread agreement among economists that electricity prices should reflect the cost of supplying additional energy, that is, the marginal cost of energy. This cost includes not only the incremental capital and operating costs incurred in producing energy, but also any environmental costs, such as Greenhouse Gas emissions that contribute to global climate change. Under City Light's current electric rates, the marginal price of energy is substantially below its marginal cost, particularly for non-residential customers (Seattle City Light, 2007-2008 COSACAR).

Table 1 – Seattle Electric Rates and Marginal Energy Costs

	Seattle Marginal Rate	Marginal Cost Of Energy	Seattle Rate as a % of Marginal Cost
Residential	$79.30/MWh	$87.88/MWh	90%
Non-Residential Average	$49.46/MWh	$86.35/MWh	57%

When electricity is priced below its marginal cost it will not be used efficiently. Customers who pay $50/MWh will not invest in conservation measures that cost $65/MWh even though City Light may have to pay $90/MWh to acquire new resources. There are many electric rate alternatives that would bring City Light rates closer to the marginal cost of energy. Some of these alternatives were actually City policy in the 1990s. Others are relatively easy to implement and promise significant energy savings, but would increase the electric bills of households and businesses that use a large amount of electricity, while decreasing the bills of those that use a smaller amount. The range of potential long-run energy savings, gains in economic efficiency, and reductions in CO_2 emissions is shown in table 2 below.

Table 2 – Efficiency Gains and Reduction in CO_2 Emissions from Rate Structure Alternatives

	Modest Reform	Substantial Reform	Radical Reform
Reduction in Load	46 aMW	84 aMW	166 aMW
Reduction in CO_2 Emissions	240,000 tons/yr	442,000 tons/yr	873,000 tons/yr
Efficiency Gains	$12,000,000/yr	$22,000,000/yr	$27,000,000 to $40,000,000/yr

In addition to reducing the pace of electric load growth, increasing economic efficiency, and cutting CO_2 emissions, the rate alternatives outlined in the paper would complement City Light's Conservation Program, providing greater incentives for program participation, increasing energy savings among non-participants, and encouraging energy-efficient behavioral changes among all customers. Finally, the reforms described below would achieve a more equitable and progressive distribution of electricity costs, advancing the Mayor's Race & Social Justice Initiative.

Table 3 – Effect of Moderate Rate Reform on Annual Household Costs by Income Quintile

Bottom 20%	Second 20%	Middle 20%	Fourth 20%	Top 20%
-$11.54	-$14.73	-$8.99	-$1.77	$37.03

II. Cost Allocation and Rate Design Alternatives

This section outlines several efficiency-enhancing rate alternatives. The guiding idea behind all of the rate structures described below is to bring the marginal price per MWh paid by City Light customers as close as possible to the marginal cost per MWh of energy, while collecting no more in total revenue than is required to meet City Light's financial requirements.

According to City Light's *2007-2008 Cost of Service and Cost Allocation Report*, the marginal cost of energy, including losses, transmission, and environmental externalities, is about \$87/MWh for the SCL system. By contrast, SCL's average cost of energy is only about \$56/MWh. This means that if some energy is sold at rates which exceed \$56/MWh, some energy must be sold at rates below \$56/MWh if SCL is to collect no more than its revenue requirement. This balancing act can be most easily combined with efficient pricing for the Residential customer class because, given the relative uniformity of energy use across this class, it's possible to employ an "ascending block rate structure" under which customers pay a below-average-cost rate for a small block of energy and a higher rate for energy use in excess of this amount. This ascending block rate structure has not been extended to other customer classes primarily because of their heterogeneous composition.

Nevertheless, it's worth reiterating the point that under City Light's current rate structure, the marginal prices facing non-residential customers are well below the marginal cost of supplying energy to these customers. Simply put, the rates paid by General Service and High Demand customers are too low from an efficiency point of view; they send the wrong price signal to customer groups which account for nearly two-thirds of SCL's total retail energy sales and which also have higher price elasticities of demand than residential customers. Table II-1 below illustrates this discrepancy.

Table II-1
SCL Rates and the Marginal Cost of Energy

	Marginal Seattle Rate	Marginal Cost of Energy[4]	Seattle Rate as a % of Marginal Cost
Residential	\$79.30/MWh[1]	\$87.88/MWh	90%
Small General Service	\$55.10/MWh	\$88.16/MWh	63%
Medium General Service	\$49.47/MWh[2]	\$87.32/MWh	57%
Large General Service	\$50.04/MWh[3]	\$86.95/MWh	58%
High Demand	\$44.21/MWh[3]	\$85.95/MWh	51%

[1]Second block rate, which is the marginal price for most residential customers
[2]Average revenue from energy sales; doesn't include demand charge revenue
[3]Weighted average of peak and off-peak energy revenue; doesn't include demand charge revenue
[4]Equals the marginal value of energy (MVE) including environmental externalities, plus losses and transmission costs divided by 2007 forecasted sales

The Theory of Marginal Cost Pricing in a Nutshell --

In simplest terms, the theory of marginal cost pricing holds that if resources are to be used efficiently, their prices must reflect the marginal, or incremental, cost of using these resources. If a good or service is priced below its marginal cost, it will be "overused" from the standpoint of efficiency. For example, if the marginal cost of energy is \$90/MWh, but it's priced at \$55/MWh, then energy users will forego conservation investments that would save energy at a cost between \$55/MWh and \$90/MWh. Moreover, the difference between the \$90/MWh cost and the \$55/MWh price will be borne by everyone. Part of this (external) cost will show up in the form of higher electric rates and part of it will be borne by the world's population in the form of Greenhouse Gas emissions and their adverse effect on the Earth's climate.

By contrast, if the marginal energy prices charged by City Light were brought into closer alignment with marginal energy costs, energy would be used more efficiently because customers would face a price closer to the full cost of supplying energy. In the long run, that is, a time frame long enough to allow for changes in equipment, many customers would find it economical to make additional conservation investments, to employ more energy-efficient technologies, and to change behavior patterns to reduce energy consumption. As a consequence, City Light would have more surplus energy to sell to utilities that use this energy to displace fossil fuel power plants, thereby reducing global CO_2 emissions.

Marginal Cost Pricing and Fairness –

It may be objected that some of the cost allocation and rate design alternatives set forth below are unfair. For example, it has been argued that eliminating residential customer charges is unfair because it would "subsidize customer costs." This objection is ill-conceived. Since City Light's marginal cost of service exceeds City Light's average cost of service, some of the utility's services <u>must be</u> subsidized, i.e., charged a rate below marginal cost. Given this constraint, the issue is not <u>whether</u> a particular service should be subsidized, but rather <u>which services</u> should be subsidized. To simplify in this case, we have a policy choice between 1) a high customer charge and a low energy rate or 2) a low customer charge and a high energy rate. Since customers can adjust their energy consumption, but not their status as a customer (in the typical case), the low customer charge/high energy rate alternative is the superior option. It will result in a more efficient allocation of resources and fewer Greenhouse Gas emissions.

A. Residential Rate Reform

Let's turn to the rate alternatives themselves. The first option is to reinstate the 1990s rate design policy wherein there was no fixed customer charge, the tail block rate was set equal to marginal cost, and the first block was set at a level that would meet the Residential customer class's revenue requirement. Since the low-cost first block of energy is the marginal rate for a small portion of SCL's residential customers, the principal effect of this alternative is to raise the tail-block rate up to marginal cost.

In response to this price increase, customers can be expected to reduce their energy use over time by weatherizing their homes, investing in energy-efficient appliances, and changing their behavior patterns. The long-run effects of this rate design change are displayed in table II-2 below. Roughly speaking, efficiency gains are measured by comparing total costs and benefits under the existing rate structure with total costs and benefits under the alternative rate design (details can be found in appendix B). The reduction in CO_2 emissions is computed by multiplying the estimated decrease in annual MWh used by 0.6 to arrive at the decrease in metric tons of CO_2 emitted.

Table II-2
Efficiency Gains and CO_2 Reduction with Residential Rate Reform

Load Reduction	CO_2 Reduction	Efficiency Gains
8 aMW	41,000 tons/yr	$280,000/yr

B. Returning to a Classical Marginal Cost Allocation Policy

The next alternative, like the residential rate structure described above, was also once City policy. Under this alternative, City Light's revenue requirement would be allocated solely on the basis of each customer class's marginal cost of service. That is to say, each customer class's share of City Light's total revenue requirement would be equal to each customer class's share of the total cost of providing service to all City Light customers (measured in terms of marginal social cost). For example, if the total cost of providing service to all City Light customers were $800 million, and if the cost of providing service to the Residential customer class were $300 million, then the Residential class would be allocated 37.5% of SCL's revenue requirement (= $300 million/$800 million).

Under this cost allocation method, which was in effect in the early 1990s, large energy users would pay a larger share of SCL's revenue requirement than they pay under the present cost allocation formula. As a consequence, the energy rates for energy-intensive customer classes would be closer to marginal cost than they are under the current cost allocation policy. Although the average residential rate would be lower than at present, the residential tail block rate could still be set equal to the marginal cost of energy, with all of the reduction in the Residential share of the revenue requirement being achieved by reducing the price of the first energy block, which is the marginal price for a relatively small percentage of the Residential customer class. The effects of this return to classical marginal cost allocation, in combination with the Residential rate reform described above, are displayed in table II-3 below. Taken together, these rate reforms would reduce the electric bills of nearly 80% of City Light's residential customers, while increasing the bills of the other 20% by an average of only 1% (see table A2 below).

Table II-3
Efficiency Gains and CO_2 Reduction
Resulting from a Return to Classical Marginal Cost Allocation

	% Change in Cost Allocation	Load Reduction	CO_2 Reduction	Efficiency Gains
Residential	-6.0%	8 aMW	41,000 tons/yr	$280,000/yr
Small General Service	0.9%	≈0 aMW	2,000 tons/yr	$130,000/yr
Medium General Service	6.2%	8 aMW	44,000 tons/yr	$3,832,000/yr
Large General Service	7.9%	7 aMW	36,000 tons/yr	$2,868,000/yr
High Demand	8.7%	6 aMW	30,000 tons/yr	$2,506,000/yr
Total		29 aMW	153,000 tons/yr	$9,617,000/yr

To summarize, the efficiency gains and reduction in CO_2 emissions displayed in table II-3 represent the annual benefits that would result over the long run from a return to the rate design and cost allocation policies that were in force in the early 1990s, before concerns about deregulation, the "unbundling" of utility services, and the threat of losing large customers led the utility away from these policies.

C. More Efficient Pricing for Non-Residential Customers

A glance at table II-1 above reveals a significant gap between marginal energy costs and the electric rates paid by City Light's non-residential customers. The rate alternatives described below aim to reduce this gap.

1. Eliminating Demand Charges

City Light's electric rates include demand charges for Medium and Large General Service Customers and for High Demand customers. The utility collects a total of about $13,000,000/year from demand charges. In theory, demand charges should promote the efficient use of City Light's transmission and distribution system. In practice, there are at least two obstacles to achieving this objective. First, demand charges would have to be structured to reflect the coincident peak demand, that is, the collective peak demand rather than the individual customer's peak demand. (This would require time-of-use demand charges). And second, anecdotal evidence suggests that City Light's demand charges do not affect customer behavior.

Although demand charges may not accomplish much in terms of efficient resource use, eliminating them would likely improve efficiency. (A penalty charge for demand in excess of some threshold could be imposed if such a charge were necessary to protect equipment from overload.) If the $13,000,000/year now collected from demand charges were instead recovered through energy rates, these rates would be closer to the marginal cost of energy, and the reduction in energy consumption in City Light's service area would make more surplus power available for the displacement of oil- and gas-fired power plants. Eliminating demand charges, by itself, would, as a first approximation, reduce City Light's load by 15 aMW and CO_2 emissions by 81,000 tons/year over the long run.

2. "Baseline Rates"

As I mentioned earlier, the ascending block rate structure that brings the marginal energy price for most residential customers close to the marginal cost of energy cannot be readily applied to non-residential classes because of their heterogeneous composition. The problem, then, is to specify the size of a low-cost "baseline" amount of energy (like the first residential block) that takes account of the wide variation in energy consumption within each of the non-residential customer classes.

"Baseline Rates" are an imperfect, but intriguing response to this problem. Under this rate design alternative, each non-residential customer would get a "low-priced energy block" similar to the residential first block. The size of this low-cost energy block would be based on the customer's average consumption over some specified period, for example, 2005-2007. Energy use in excess of this baseline amount would be charged at a rate equal to the marginal cost of energy.

This is not an entirely new approach to rate design. On April 1, 2006, B.C. Hydro implemented a "stepped baseline rate" for its largest customers. Under this rate, 90% of a customer's baseline load is priced at $24/MWh, while additional use is priced at $73.60/MWh, for an effective average rate of about $29/MWh with unchanged consumption. According to B.C. Hydro, this rate structure "continues to encourage energy conservation" and, in combination with the utility's "Power Smart" demand-side management program, accounted for energy savings totaling 632,000 MWh (72 aMW) for FY2008 (B.C. Hydro annual FY 2008 report). More recent developments regarding B.C. Hydro's "conservation rate" can be found here:
http://www.bchydro.com/news/conservation/2012/lgs-conservation-rate.html

To illustrate how this rate design works, suppose a Medium General Service customer's average energy consumption over some specified period were 1,000 MWh/year. This customer might then get a low-priced energy block of 700 MWh/year at below average cost, say, $30/MWh, but would pay a marginal-cost based rate of, say, $87/MWh for consumption in excess of 700 MWh. The precise rate for the low-cost block would be set at a level such that the customer's electric bill would be the same under this "Baseline Rate" as it would be under the current Medium General Service rate of $46.70/MWh, assuming the customer used the same amount of energy under both rate structures. Table II-4 displays the customer's bill under the existing rate structure and under the baseline rate structure with more precise rates for the two blocks of energy.

Table II-4
A Customer's Bill under Existing Rates and under Baseline Rates

Customer bill under existing rate structure	Customer bill under baseline rate
1,000 MWh * $46.70/MWh = $46,700	700 MWh * $29.29/MWh = $20,504
	300 MWh * $87.32/MWh = $26,196
	Total bill = $46,700

It may be asked whether anything would be accomplished insofar as the customer's electric bill is the same under the two rate structures. In fact, quite a lot would be achieved over the long run. To begin with, the customer's consumption wouldn't likely remain constant under a baseline rate because the cost of using an additional MWh under the baseline rate is 87% greater than the cost of using an additional MWh under the current rate structure ($87.32/MWh vs. $46.70/MWh). Likewise, the benefit of saving a MWh would also be 87% greater under the baseline rate. There are, most likely, energy-efficient technologies and behavioral changes, which, while not cost effective for a business paying an electric rate of $46.70/MWh, would be cost effective for a business paying a marginal cost-based rate of $87.32/MWh. Consequently, energy use under baseline rates would be significantly lower than energy use under SCL's existing rate structures. Table II-5 below provides a very rough estimate of the long-run efficiency gains and reduction in CO_2 emissions that could be reasonably expected under a baseline rate structure.

Table II-5
Efficiency Gains and CO_2 Reduction with Baseline Rates for Non-Residential Customers

	Load Reduction	CO_2 Reduction	Efficiency Gains
Small General Service	20 aMW	104,000 tons/yr	$2,443,000
Medium General Service	62 aMW	327,000 tons/yr	$10,171,000
Large General Service	39 aMW	204,000 tons/yr	$6,192,000
High Demand	38 aMW	197,000 tons/yr	$6,737,000
Total	158 aMW	832,000 tons/yr	$25,543,000

As shown in Table II-5, the efficiency gains and reduction in CO_2 emissions achieved under Baseline Rates are impressive. Moreover, no customer would be worse off under this rate alternative than under current rates at the customer's current level of energy use. However, these advantages must be balanced against some practical difficulties associated with this rate structure. These include the following: 1) anomalies affecting a customer's energy consumption, e.g., a business that shuts down for six months due to remodeling and consequently has an artificially small baseline block of low-cost energy; and 2) the problem of new accounts, in particular, determining how large their block of low-cost energy should be. Yet, despite these difficulties, B.C. Hydro insists that the benefits of its "stepped baseline rate" exceed its costs.

3. A Negative Customer Charge or "Global-Warming Credit"

A different approach that achieves more modest results without these practical drawbacks relies on a "negative customer charge," which might also be called a "global warming credit." Recall that the primary obstacle to achieving efficient rate design (when marginal costs exceed average costs) is the utility's (average cost-based) revenue requirement. Simply put, marginal cost charges must be offset by other, below-average cost charges. One way to do this is to grant each customer a fixed credit that would be subtracted from the customer's total electric bill.

For example, suppose all Small General Service customers were granted a $50/month credit against their electric bills, so that their total bill was equal to kWh used x rate per kWh minus the $50 credit. (A minimum charge could be added in order to eliminate negative bills.) Because of the credit, the (revenue-neutral) rate per kWh would be higher under this rate alternative than under the current rate structure. To be more specific, let's suppose that customer credits for each customer class were established according to the formula below:

Credit = 10% of customer class's revenue requirement/number of customers in the class

Roughly speaking, this alternative would raise energy rates by 10% while collecting the same total revenue. The potential efficiency gains and CO_2 reduction attributable to this rate alternative are displayed in table II-6 below, which assumes customer cost shares based solely on marginal costs as in table II-3. (Combining a classical marginal cost allocation with "Baseline Rates" was unnecessary because all non-residential customers would pay marginal cost for their marginal units of consumption regardless of cost allocation.)

Table II-6
Efficiency Gains and CO_2 Reduction with Negative Customer Charges
("Global-Warming Credits")

	Load Reduction	CO_2 Reduction	Efficiency Gains
Residential	8 aMW	41,000 tons/yr	$280,000/yr
Small General Service	6 aMW	29,000 tons/yr	$1,407,000/yr
Medium General Service	14 aMW	71,000 tons/yr	$4,159,000/yr
Large General Service	9 aMW	46,000 tons/yr	$2,617,000/yr
High Demand	7 aMW	35,000 tons/yr	$2,279,000/yr
Total	42 aMW	222,000 tons/yr	$10,745,000/yr

Unlike the Baseline Rate alternative, which holds ratepayers harmless at their current level of consumption, the combination of equal customer credits and higher energy rates would reduce the electric bills of low energy-use customers while increasing the bills of high-use customers. (The disparate rate impact of this alternative could be mitigated by increasing the number of customer classes so that the difference between average consumption and "consumption at the extremes," within each customer class, was smaller than under the current scheme of customer classification.) On the other hand, the negative customer charge rate alternative is easy to implement and its differential customer impacts may not be any greater than the disparate customer impacts that occurred when City Light's adopted ascending block rates for residential customers.

4. A New Electric Rate Design for City Light's High Demand Customer Class

This section outlines a new electric rate design for City Light's High Demand customer class, which is composed of ten large customers. The rate structure includes two elements:

1. The High Demand energy rate would be set at the marginal cost of energy, increasing the existing (effective) rate of $44.21/MWh to $85.95/MWh; and

2. To offset this increase, each High Demand customer would receive a credit against their electric bill based on the firm's number of employees (FTEs).

The "employee credit," $/FTE, would be set so that each High Demand customer's total electric bill, including the "employee credit," would be equal to what the customer's bill would have been under the current rate structure, assuming the same level of energy use. An illustrative example of a High Demand customer's annual electric bill under existing rates and under this rate alternative is shown in table II-7 below.

Table II-7
A High-Demand Customer's Bill under the Existing Rate and under the Alternative Rate

Annual electric bill under existing rate structure	Annual electric bill under the alternative rate
100,000 MWh * $44.21/MWh = $4,421,000	100,000 MWh * $85.95/MWh = $8,595,000
	2,000 employees * $2,087/employee = ($4,174,000)
	Total electric bill with credit = $4,421,000

Although the customer's total electric bill remains unchanged (assuming the same volume of energy use), *the customer's reward for energy savings has doubled, while the customer's cost of adding employees has fallen* (by $2,087/employee/yr in this example).

Table II-8 displays the long-run results of this rate alternative, leaving aside the effect it might have on employment.

Table II-8
High Demand Rate Reform Benefits

Reduction in Load	Reduction in CO_2 Emissions	Efficiency Gains
44 aMW	230,000 tons/yr	$7,949,000/yr

Details of the Alternative

The main challenge posed by this rate alternative is the determination of the dollar value of the "employee credit." Assuming energy use per employee differs across the ten customers in the High Demand rate class, the "employee credit" would have to be tailored to each customer's MWh/FTE ratio to hold all High Demand customers harmless in comparison to the existing rate structure. (If one rejects the "hold harmless" criterion, then a wider range of alternatives opens up.) The simplest approach would be to take each High Demand customer's average level of employment over (say) the last three years and then compute the "employee credit," $/FTE, that would hold each customer harmless in comparison with the existing rate structure, assuming the same quantity of electricity use. (The University of Washington might be excluded from this customer class, though it could be served under the baseline rate described above.)

Alternatively, City Light could invite its High Demand customers to propose a formula for adjusting the "employee credit" with the stipulation that the formula can be reasonably expected to at least hold City Light's other ratepayers harmless.

Although this alternative involves a new approach to rate setting, it's important to bear in mind that there are only ten ratepayers in this customer class, so the details of the alternative could be negotiated, provided the final rate structure generated expected benefits for both the High Demand customer class and the rest of City Light's ratepayers. Finally, such a contract offer might be combined with a City Light program to finance cost-effective energy efficiency improvements undertaken by High Demand customers.

F. Summary of Rate Alternatives

Table II-9 displays the effects of each rate alternative described above assuming that the alternative is implemented separately from all the others. The energy savings, reduction in CO_2 emissions, and efficiency gains associated with these alternatives aren't necessarily additive.

Table II-9 Summary of Rate Alternatives

	Energy Savings	CO_2 Reduction/yr	Efficiency Gains/yr	Comment
1. Residential Rate Reform	8 aMW	41,000 tons	$280,000	Return to 1990s rate design policy; no customer charge; tail block = MC; easy to implement
2. Classical MC Allocation	29 aMW	153,000 tons	$9,617,000	Return to 1990s cost allocation policy; easy to implement
3. Eliminate Demand Charge	15 aMW	81,000 tons	$4,933,000	Zero demand charges; higher energy charges; easy to implement
4. Baseline Rates*	158 aMW	832,000 tons	$25,543,000	Potentially large energy savings; implementation challenges
5. Negative Customer Charges	42 aMW	222,000 tons	$10,745,000	Very effective; easy to implement; public relations challenge
6. New High Demand Rate*	44 aMW	230,000 tons	$7,949,000	Could be very effective; new approach to neglected class; implementation challenge

*Under these alternatives, customer bills remain unchanged assuming no change in energy use.

I have combined these rate alternatives into three different groups under the headings: 1) Modest Reform; 2) Substantial Reform; and 3) Radical Reform. Table II-10 below describes the elements comprising each of these "policy packages" as well as estimates of their effect on SCL load, CO_2 emissions, and economic efficiency.

Table II-10
Marginal Cost Pricing Policy Alternatives

	Modest Reform (Alts. 1, 2, 3 from Table II-9)	Substantial Reform (Alts. 1, 2, 3, 5 from Table II-9)	Radical Reform (Alts. 1, 3, 4, 6 from Table II-9)
Description of the Policy Package	Return to Classical MC Allocation; Elimination of Residential Customer Charge; Residential Tail Block set at MC; Elimination of Demand Charges	Includes all elements in Modest Reform Package plus Negative Customer Charges for Non-Residential Customers	Includes Residential Rate Reform; Baseline Rates for General Service Customers; New High Demand Rate
Total Load Reduction	46 aMW	84 aMW	166 aMW
Reduction in CO2 Emissions	240,000 tons/yr	442,000 tons/yr	873,000 tons/yr
Efficiency Gains	$12,000,000/yr	$22,000,000/yr	$30,000,000/yr

The Modest Rate Reform Package. Two of the elements in the Modest Reform package except the elimination of demand charges were in place in the early 1990s. During this decade, the policies governing cost allocation and rate design gave greater weight to the theory of marginal cost pricing and efficient resource use than to deregulation and possible competition in the retail energy market. These policies were abandoned toward the end of the 1990s on the grounds that City Light would soon be offering "unbundled" utility services in a competitive retail energy market. Following the "Energy Crisis of 2001," this vision of the electricity industry lost its luster, and there is now renewed interest in conservation and energy efficiency, as well as new concerns about global climate change. Returning to a classical marginal cost allocation formula, eliminating residential customer charges, and setting the residential tail block at marginal cost are "modest" reforms because they were once City policy. And the remaining component of this policy package – the elimination of demand charges – would be easy to implement.

The Substantial Rate Reform Package. The only difference between this alternative and the "modest" alternative is the addition of negative customer charges or "Global Warming" credits against a customer's bill, which makes it possible for non-residential energy rates to be pushed closer to marginal costs while remaining within the utility's revenue constraint. Negative customer charges pose no serious administrative difficulties, only symbolic and political problems: a negative customer charge is counterintuitive and would increase the electric bills of large energy users, while reducing the bills of small users. In principle, negative customer charges are no different than zero customer charges; both involve subsidies and both generate a more efficient allocation of resources in comparison to rate alternatives that include zero or positive customer charges. Moreover, a customer credit could be phased in gradually, beginning at the 5% level, i.e., a negative customer charge that would offset a 5% increase in non-residential energy rates, and then increase by, say, 2%/year up to a maximum of, say, 10% to 20%. (The energy savings and efficiency gains shown in table II-10 assume a 10% increase in non-residential energy rates over the long run.)

The Radical Rate Reform Package. I've called the combination of Residential rate reform, baseline rates for Small, Medium, and Large General Service customers, and the new employee-based marginal cost pricing scheme for High Demand customers the "Radical Rate Reform Package" because the latter two rate alternatives are sharp departures from the status quo. (It may be noted, however, that B.C. Hydro uses a baseline rate design for one of its customer classes, and that BPA has also used this kind of rate design.) This reform package promises the greatest energy savings and reduction in CO_2 emissions because it brings the marginal price facing all customers up to marginal cost. And while it would produce a small increase the electricity bills of large Residential customers (and a slight decrease in the bills of small Residential customers), it would leave the bills of all non-residential customers unchanged assuming the same level of consumption. On the other hand, this policy package poses more administrative challenges than the other two alternatives.

E. Preliminary Conclusions and Tentative Recommendations

> "On November 1 & 2, 2007, America's mayors took center stage in the effort to stop global warming as they gathered in Seattle for an unprecedented summit to spur local and federal action on climate change. Hosted by the U.S. Conference of Mayors, the Seattle summit was the largest-ever meeting of American mayors devoted solely to climate protection."
>
> From the Mayor of Seattle's Website

A Brief History of City Light Rate-Making -

Before drawing some preliminary conclusions and offering a few tentative recommendations in support of the City's commitment to climate protection, I want to mention two previous turning points in City Light's history. For several decades prior to the 1970s, when City Light had a great deal of excess hydroelectric capacity and the marginal cost of power was close to zero, City Light sold energy to residential, commercial, and industrial customers under a declining block rate structure: the more energy a customer used, the lower the price the customer paid. In addition to promotional electric rates, City Light encouraged customers to use electricity for space and water heating, marketed electric appliances, and even repaired the appliances when they broke. The utility chose as its motto a line from the French writer, Emile Zola – "electricity, use it as freely as the air you breathe." These undertakings were all part of a rational strategy designed to exploit the exceedingly low marginal cost of energy during the era of cheap hydropower.

As the region's growing energy demands pressed against its hydroelectric capacity, many utilities, in cooperation with the Bonneville Power Administration, sought to expand supply capacity by financing the construction of new coal and nuclear power plants. Seattle pursued a different course of action. The City declined to purchase a share of WPPSS nuclear plants #4 and #5 and instead invested heavily in conservation, while replacing City Light's declining block electric rates with increasing block rates for residential customers, and flat rates for commercial and industrial customers. In addition, the Mayor and Council adopted a policy wherein City Light's revenue requirement was allocated solely on the basis of the marginal cost of service (Classical Marginal Cost Allocation). These changes in rate structure unquestionably produced winners and losers. Single-family residential customers with electric heat paid more, while those without electric heat typically paid less. Energy intensive customer classes paid a larger fraction of the utility's revenue requirement, while the Residential and Small Business classes paid a smaller fraction. Yet these disparate rate impacts were accepted by the Mayor and City Council because they were a necessary byproduct of the City's commitment to environmental stewardship and the efficient use of resources.

There was yet another shift in outlook and policy that preceded the current concern with climate protection. In the 1990s, deregulation and competition were transforming the electric utility industry. Some industry observers imagined an electricity market in which utilities like Seattle City Light would offer "unbundled" services, so that a Seattle household or business would be able to purchase energy from Puget Sound Energy while buying customer and distribution services from Seattle City Light. There was also concern that some of City Light's largest customers would purchase power from other utilities or independent power producers, which would result in higher rates for City Light's (remaining) customers. In response to these concerns, City Light developed a hybrid cost allocation method, which, instead of allocating costs solely on the basis of the marginal cost of service, applied "marginal cost shares" to the utility's "unbundled revenue requirement." The effect of this policy change was to dilute the importance of marginal energy costs in City Light's cost allocation method and to shift costs from the more intensive energy customer classes back to the Residential customer class. As a consequence, non-residential rates are now lower than they would be under the Classical Marginal Cost Allocation formula, and energy consumption and CO_2 emissions are higher. (Although the Residential customer class would pay a smaller share of utility costs under Classical Marginal Cost Allocation, the Residential tail block can be set equal to marginal cost under either cost allocation method).

The conditions that were invoked to justify City Light's hybrid cost allocation method no longer prevail: City Light is not on the verge of offering "unbundled" services in a competitive retail energy market; City Light does not compete with other utilities for retail energy sales within Seattle; City Light's Commercial rate is 33% lower than Puget's commercial rate; and City Light's Industrial rate is 38% lower than Puget's industrial rate. Most importantly, the vision of a deregulated retail energy market has been eclipsed, at least in the Pacific Northwest, by concerns about climate change (not to mention the Energy Crisis of 2001). And, yet, while climate protection has become one of the City's preeminent policy objectives, City Light's cost allocation formula, and, to a lesser extent, the utility's approach to rate design, bear the marks of an earlier epoch.

Preliminary Conclusions and Tentative Recommendations:

1. City Light has said that "all City Light customer classes are now paying their fair share." A more complete accounting would read: "all City Light customer classes are now paying their fair share under City Light's current cost allocation method." Judged against a cost allocation formula that is, arguably, more consistent with the City's current policy objectives, one may conclude that some customers are paying more than their fair share and some less.

   What I have called Classical Marginal Cost Allocation gives greater emphasis to the marginal cost of energy and to global-warming externalities than does City Light's current hybrid method of cost allocation. Returning to the Classical Marginal Cost Allocation would reduce total energy consumption and CO_2 emissions, while improving resource efficiency. Moreover, this method of cost allocation is simpler and more transparent than City Light's present method, which requires many technical, but discretionary, judgments in order to create an "unbundled, functionalized revenue requirement." Finally, a return to Classical Marginal Cost Allocation would increase participation in City Light's non-residential conservation programs while offsetting, to some extent, the regressive distribution of costs and benefits associated with these programs. (See the discussion of the distribution of costs under the Modest Rate Reform Package in Appendix A; and the discussion of the distribution of costs and benefits of City Light's Conservation Program with, and without, rate reform, in Appendix C).

2. Residential rate reform, that is, eliminating the customer charge, setting the tail block at marginal cost and the first block at the level necessary to meet SCL's revenue constraint, has all the economic and environmental virtues attributed to the Classical Marginal Cost Allocation formula described above. Taken together, these two rate reforms would reduce the electric bills of nearly 80% of City Light's residential customers, while increasing the bills of the other 20% by an average of only 1% (see table A2 below).

3. Unless City Light can demonstrate that its current scheme of demand charges produces a more efficient allocation of resources than the alternative of zero demand charges and higher energy rates, demand charges should be eliminated in favor of higher energy charges (though a penalty charge may be necessary to protect equipment from overload). If City Light plans to impose time-of-use demand charges, or some other demand charge alternative that encourages efficient resource use, then it may be prudent to retain the status quo in the interim.

4. Negative customer charges pose a public relations nightmare; that's why I've called them "Global Warming Credits." Of course an appealing phrase is not sufficient to carry the day. So try this argument on for size: with negative customer charges, the subsidy per MWh used is smaller, the allocation of resources is more efficient, and CO_2 emissions are lower.

   It's true that small users within a customer class would see lower electric bills under this alternative, while large users would see higher bills. But if negative customer charges totaled 10% of a customer class's revenue requirement, the maximum rate increase for any customer in this class would be 10% (bearing in mind that most customers would likely pay smaller bills even though energy rates were higher). In thinking about these disparate bill impacts, it's useful to recall that when City Light adopted inverted rates for residential customers, some electric heat customers saw bill increases of 50% (though not necessarily all at once). At a minimum why not consider a gradual implementation of this rate alternative? City Light could impose a small negative customer charge that would initially raise non-residential energy rates by 2%, while collecting the same amount of revenue. City Light could then increase this negative customer charge, and hence increase energy rates, by 1% or 2%/year (holding total revenue constant) until the negative customer charge reached 10% of the class revenue requirement, so that the energy rate was 10% higher than it would be with no customer charge.

5. Baseline rates are attractive because they would bring every customer's marginal price up to the marginal cost of energy while holding all customers harmless at their current level of consumption. The reduction in City Light's load growth and in CO_2 emissions would be significant. Compared to conventional electric rates, baseline rates are more difficult to implement, and, because of energy use anomalies, not all customers could be held harmless. However, this rate alternative seems feasible for a relatively small group of large energy users. As I've noted above, this kind of two tier rate has been employed by BC Hydro at the retail level and by BPA at the wholesale level.

6. The High Demand rate outlined above would provide a powerful incentive for investments and operational changes that improve energy efficiency. It would also provide an incentive for employment in industries that are both important to the local economy and often neglected in the "Green Jobs" vision. The challenge is to find a MWh/employee formula that's attractive to large customers and to the rest of City Light's ratepayers. Given the potential environmental and economic benefits of this rate alternative, a more thorough exploration of this option is warranted.

A Final Note: Changing in Order to Preserve

Consider the following thought experiment: you are told that at the current level of worldwide CO_2 emissions there's a ten percent chance the Earth's population will face some kind of catastrophe due to global warming. Next, suppose you are asked to choose between two electric rate designs that will be applied worldwide. One rate design maintains the status quo while the other increases conservation incentives, but poses administrative challenges and/or creates winners and losers. Which alternative would you choose?

I don't want to discount the practical and political difficulties involved in rate reform. Rather, I'm urging that the rate alternatives outlined above be judged against the backdrop of global climate change and the risk it poses to the Earth's inhabitants. That said, it is important to bear in mind that the transition to a more energy efficient, Earth-friendly rate structure can be implemented over time, and its disparate bill impacts mitigated with considerable precision, by invoking the principle of "gradualism," which allows new rate policies to be implemented over as many rate periods as the Mayor and Council desire.

Appendix A – Electric Bill Impacts of the "Modest Rate Reform Package"

This appendix describes the electric bill impacts of the "modest reform" package of rate alternatives presented above. But before we turn to these bill impacts, it's important to again stress that changes in cost allocation and rate design can be spread over several rate periods so that no customer class receives an immediate bill increase greater than, say, 10%, or 7%, or 5%, or whatever level of increase decision makers judge to be acceptable.

1. Returning to a Classical Marginal Cost Allocation Policy

Under this alternative, City Light's revenue requirement would be allocated in proportion to the marginal cost of serving each of SCL's customer classes. Arguably, this approach to cost allocation is more appropriate for an era of global climate change because it assigns more weight to the cost of energy, ***including global-warming externalities***, in allocating SCL costs, and because its implementation would actually reduce CO_2 emissions (see table II-4 above). Table A1 displays the change in cost shares that would result from a return to a classical marginal cost allocation policy (based on City Light's *2007-08 Adopted Cost Allocation Report*).

Table A1
Change in Cost Shares with a Return to Classical Marginal Cost Allocation

Residential	Small General Service	Medium General Service	Large General Service	High Demand
– 6%	1%	6%	8%	9%

As table A1 indicates, the residential cost share of City Light's revenue requirement would decline by 6%, while the cost shares of other, more energy-intensive, customer classes would rise.

2. Residential Rate Design Improvements

The second element in the modest reform package includes the following changes to residential rates: 1) elimination of the fixed residential customer charge; 2) an increase of the tail block rate so that it's equal to the marginal cost of energy; and 3) a reduction in the first block rate to satisfy the revenue constraint. Table A2 displays the combined effects on residential electric bills of returning to a classical marginal cost allocation along with the three residential rate design changes outlined above.

Table A2
Effect of "Modest Reform" on Residential Electric Bills

	Low Use Customer[1]	Medium Use Customer[2]	High Use Customer[3]
% of residential customers[4]	24%	55%	21%
Average annual bill current rate	$186	$801	$1,308
Average annual bill alternative rate	$100	$769	$1,326
Change in annual bill	– $86	– $32	$17
Change in monthly bill	– $7	– $3	$1
% change in average bill	– 46%	– 4%	1%

[1]4,000 kWh/yr. [2]11,900 kWh/yr. [3]18,320 kWh/yr [4]About 24% of residential customers use less than 4,000 kWh/yr; about 55% use between 4,000 and 12,000 kWh/yr, and about 21% use more than 12,000 kWh/yr

3. Eliminating Demand Charges and Increasing Non-Residential Energy Rates

The demand charges that City Light applies to Medium and Large General Service and High Demand customers may not contribute very much to efficiency. Under this alternative, these charges would be eliminated and the "lost revenue" recovered through higher energy charges. Tables A3, A4, and A5 display the combined effects of a return to a classical marginal cost allocation policy and the elimination of demand charges for selected Medium and Large General Service customers and for selected High Demand customers. Generally speaking, customers with low load factors (i.e., a low ratio of energy use to peak demand) fare better under this alternative than do customers with high load factors. (The electric bills of Small General Service customers would remain essentially unchanged under the "modest reform alternative").

Table A3
Medium General Service

	KWh	Annual bill at current rates	Change in annual bill	% change in bill
Chemical processing	14,390	$1,522	-$781	-51%
City park	55,840	$3,558	-$681	-19%
Golf club	63,800	$3,759	-$472	-13%
Grocery	606,720	$30,999	$256	1%
Restaurant	691,230	$33,522	$2,086	6%
Marine cargo handling	757,080	$37,153	$1,847	5%
TV broadcasting station	1,717,220	$82,755	$5,706	7%
Federal marine research services	3,736,800	$181,673	$10,824	6%
Hospital	6,466,200	$313,031	$20,069	6%
Communications installation	8,137,000	$391,525	$27,644	7%

Table A4
Large General Service

	Max kW	Total kWh	Annual bill at current rates	$ change in annual bill	% change in bill
Port	1,152	5,847,018	$271,993	$26,271	9.66%
Hospital	1,410	9,736,252	$463,125	$40,458	8.74%
Const. materials	1,563	1,849,156	$94,942	$485	0.51%
College	1,987	5,692,541	$289,538	$18,832	6.50%
Transit	2,756	4,699,941	$258,067	$10,290	3.99%
Glass	2,929	17,211,359	$807,633	$70,030	8.67%
Biotech	5,616	30,135,797	$1,435,655	$120,052	8.36%

Table A5
High Demand

	Max kW	Total kWh	Annual bill at current rates	$ change in annual bill	% change in bill
Cement Plant	10,480	58,879,795	$2,640,988	$235,606	8.92%
Waste Treat	11,558	47,061,103	$2,132,588	$179,051	8.40%
Cement Plant 2	13,196	76,360,369	$3,408,890	$322,890	9.47%
Steel Mill	17,465	108,119,028	$4,824,993	$438,919	9.10%
Glass Package	17,798	115,473,244	$5,167,328	$506,274	9.80%
Education Institution	44,368	261,647,720	$11,941,822	$1,114,774	9.34%
Steel Mill	71,766	264,526,162	$11,875,177	$834,775	7.03%

4. Estimating the Progressivity of the "Modest Rate Reform Package"

In addition to evaluating electric rate alternatives in terms of their efficiency and cost-of-service characteristics, policy makers may be interested in how these rate structure changes would affect different income groups. Estimating these effects with great precision is difficult because there are many factors that determine the extent to which an increase in non-residential electricity costs is borne by consumers in the form of higher prices, by stockholders in the form of lower profits, and by workers in the form of lower wages. Bearing this qualification in mind, however, we can make a rough estimate about the range of possible outcomes.

Returning to a classical marginal cost allocation policy would shift about $12,000,000 from the Residential customer class to the Medium General Service, Large General Service, and High Demand customer classes. The $12,000,000 cost saving enjoyed by residential customers would accrue to households in proportion to their electricity use, i.e., large users would enjoy greater benefits than small users (though this result would be offset somewhat by the elimination of the fixed customer charge and the increase in the tail block rate). As a first approximation, we can allocate this $12,000,000 cost saving to income groups (quintiles) in proportion to each income quintile's share of household electricity costs (from the Bureau of Labor Statistics, *2006 Survey of Consumer Expenditure*, which is based on national data). In this estimate, we provisionally assume that all of the $12,000,000 cost increase for businesses is shifted forward to consumers and allocate these costs based on each income quintile's share of total consumption expenditure. An adjustment has been made to the bottom quintile to take account of City Light's low-income rate assistance program. The results are displayed in table A6 below.

Table A6
Change in Annual Household Costs by Income Quintile

Bottom 20%	Second 20%	Middle 20%	Fourth 20%	Top 20%
– $5.53	– $9.23	– $5.26	$1.20	$18.82

Table A6 shows that returning to a classical marginal cost allocation method would be progressive in its effects, reducing the costs of lower income groups and increasing them for higher income groups. The reason for this result is that lower income households spend a larger percentage of their income on electricity than higher income households and a smaller percentage of their income on consumption in general than higher income households.

To get a feel for the range of possible outcomes, we may assume that businesses can only shift 50% of their cost increase forward to consumers, and that the remaining 50% is borne equally by stockholders (or other property owners) and wage earners. The results are displayed in table A7 below.

Table A7

Change in Annual Household Costs by Income Quintile (Alternative Assumptions)

Bottom 20%	Second 20%	Middle 20%	Fourth 20%	Top 20%
-$11.54	-$14.73	-$8.99	-$1.77	$37.03

Appendix B
Methods and Assumptions

1. *Estimating Efficiency Gains and Reduction in CO_2 Emissions*

The efficiency gains of the alternative rate structures presented in tables II-2, II-3, II-5, II-6, II-8, and II-9 above were estimated in the following way. First we compute the efficiency gains that would be achieved if all energy rates were set equal to marginal energy costs. This value is given by

Efficiency gain from setting rates equal to marginal cost = $.5 * (MC - Rate) * (Q^{Rate} - Q^{MC})$ [1]

Where,

MC = marginal cost of energy, including losses, transmission, and externalities
Rate = current energy rate under present policies (weighted average of peak and off-peak rates where relevant)
Q^{Rate} = quantity of energy consumed at the current energy rate
Q^{MC} = quantity of energy that would be consumed at MC

Given SCL's revenue constraint, we can't set all rates equal to marginal cost. Hence, we must estimate the "efficiency losses" (relative to full marginal-cost pricing) arising from this concession. These "losses" are given by

Efficiency losses compared to full MC pricing = $.5 * (MC - Rate\ Alt) * (Q^{Rate\ Alt} - Q^{MC})$ [2]

Where,

MC = marginal cost of energy, including losses, transmission, and externalities
Rate Alt = alternative energy rate
$Q^{Rate\ Alt}$ = quantity of energy that would be consumed at the alternative energy rate
Q^{MC} = quantity of energy that would be consumed at MC

Finally, the efficiency gain attributed to the alternative rate structure is equal to [1] minus [2].

To estimate the reduction in CO_2 emissions resulting from a rate alternative, I've assumed that each MWh of reduced energy consumption in the SCL service area would increase SCL's surplus power sales by an equal amount, and that the power plants displaced by these surplus energy sales would otherwise produce 0.6 metric tons of CO_2 per MWh of generation.

It's worth pointing out that the efficiency gains and the reductions in CO_2 emissions aren't necessarily proportionate to one another because the estimated efficiency gains depend on 1) the difference between an alternative electric rate and the marginal cost of power and 2) the difference in demand at the alternative rate and at a rate equal to marginal cost, whereas estimated reductions in CO_2 emissions depend only on the difference between demand at current rates and demand at the alternative rates.

2. Price Elasticity of Electricity Demand

The estimate of both efficiency gains and reductions in CO_2 emissions requires assumptions about the price elasticity of electricity demand for each of SCL's customer classes. I've assumed the following long-run price elasticities of demand: -0.1 for the marginal energy consumption of Residential customers who only buy energy in the first energy block and -0.4 for second block Residential consumption. For those rate alternatives that entail a relatively small increase in marginal price (classical marginal cost allocation, eliminating demand charges, and negative customer charges), I've assumed a long-run elasticity of -0.4 for Small General Service and -0.5 for Medium General Service, Large General Service, and High Demand customers. For those alternatives that entail a relatively large increase in marginal price (baseline rates and the High Demand rate alternative), I've assumed a long-run elasticity of -0.25 for Small General Service, -0.3 for Medium and Large General Service, and -0.35 for High Demand customers.

These elasticity assumptions may be compared to the following estimates:

A. An analysis by EES Consulting for WPAG, which can be found at BPA's website, http://www.bpa.gov/power/lp/sn03/files/Parties_Data_Responses/CR-WA-004A.doc, gives the following range of estimates for long-run price elasticities in the Pacific Northwest:

Residential: -0.35 to -2.23   Commercial: -0.29 to -1.65   Industrial: -0.76 to -2.87

B. Another survey of price elasticities of demand can be found at: http://www.energy.ca.gov/ER96/documents/staff_documents_filed/ER96_96-07-17_stevens.pdf, which gives the following long-run price elasticity ranges:

Residential: -0.45 to -1.89   Commercial: -1.00 to -1.60   Industrial: -0.51 to -1.82

C. Rand technical report, *Regional Differences in the Price Elasticity of Demand for Energy* (2005) at: http://www.rand.org/pubs/technical_reports/2005/RAND_TR292.pdf, which gives a -1.2 long-run price elasticity coefficient for commercial electricity use in Washington State, but only a -0.2 long-run elasticity coefficient for residential electricity use in Washington. If the Rand study is correct, and the price elasticity of commercial demand is significantly greater than the price elasticity of residential demand, then the efficiency gains and CO_2 reductions that can be achieved by setting commercial energy rates closer to marginal cost will be much larger than the gains that can be achieved by raising residential energy rates (the second block of which is already much closer to marginal cost than all the non-residential energy rates).

D. Jean-Thomas Bernard, *Energy Demand Elasticities:Empirical Results in the Québec Context* Department of economics, Université Laval, Ste-Foy, Quebec, Canada G1K 7P4, April 19, 2006, which gives the following range of long-run elasticities:

Residential: -0.14 to -0.4   Commercial: -0.46 to -0.55   Industrial: -0.26 to -0.36

E. The table below is from Steven H. Wade, "Price Responses in the Annual Energy Outlook Annual Energy Outlook 2003 (AEO2003) versions of the Energy Information Administration's (EIA's) National Energy Modeling System (NEMS) Residential and Commercial Demand Models" at http://tonto.eia.doe.gov/ftproot/forecasting/analysispaper/buildings.pdf

	Short-Run Price Elasticity			Long-Run Elasticity
	1-Year	2-Year	3-Year	
Residential	-0.20	-0.29	-0.34	-0.49
Commercial	-0.10	-0.17	-0.20	-0.45

F. Dahl, "A Survey of Energy Demand Elasticities in Support of the Development of the NEMS," US DOE, Contract Number DE-AP01-93EI23499 (October 1993), which gives the following electricity elasticity ranges:

	Short-run	Long-run		Short-run	Long-run
Residential:	- 0.22	- 0.91	Commercial:	- 0.26	- 0.99

To summarize, the elasticity coefficients used in this paper tend to be at the low end of the range of estimates of long-run elasticity.

3. Return to Cost Marginal Cost Allocation

To allocate City Light's revenue requirement solely on the basis of marginal costs, we simply divide each customer class's marginal cost of service by the marginal cost of service for the system and then apply the resulting percentage shares to SCL's revenue requirement. The cost shares under current policy and under the pure marginal cost alternative, as well as the customer class revenue impacts of moving from the current policy to the marginal cost alternative, are shown below (does not include street lights).

	Residential	Small GS	Medium GS	Large GS	High Demand
% share (current policy)	37.85%	12.52%	22.82%	14.94%	9.93%
% share (MC alternative)	35.58%	12.70%	24.09%	16.03%	10.75%
% change in cost share*	-6.0%	0.9%	6.2%	7.9%	8.7%

*% change in cost share represents the effect of moving from the current cost allocation policy to the MC alternative. Thus, e.g., the residential class's share would be 6% lower, and Small General Service class's share would be 0.9% higher following such a shift in cost allocation policy.

Appendix C
Rate Reform and City Light's Conservation Program

The ambitious extension of City Light's conservation program in 2009 and beyond doesn't include any electric rate reforms. The two approaches should, however, be considered together in the design of a comprehensive program.

Table C1 below compares Seattle rates with the marginal cost of energy that was estimated by SCL last year. (If wind power is now regarded as the marginal resource, then the marginal cost of energy would be approximately $100/MWh.)

Table C1
Seattle Electric Rates and Marginal Energy Costs

	Marginal Seattle Rate	Marginal Cost of Energy	Seattle Rate as a % of Marginal Cost
Residential (Tail Block)	$79.30/MWh	$87.88/MWh	90%
Non-Residential Average	$49.46/MWh	$86.35/MWh	57%

Two conclusions can be drawn from Table C1. First, City Light's energy is under-priced from an efficiency point of view, and, second, this under-pricing is greater in the non-residential sectors.

Bringing electric rates into closer alignment with marginal costs ("rate reform") would yield the following benefits:

1. Rate reform would increase the economic incentives for participation in City Light's conservation programs as $/kWh saved would be greater;

2. Rate reform would produce conservation savings among customers not participating in City Light's conservation program;

3. Rate reform would provide incentives for changes in behavior and in business operations (whereas SCL's conservation programs focus on capital investments); and

4. Rate reform would offset, to some extent, the regressive distribution of costs and benefits associated with City Light's conservation program the benefits of which flow mainly to property owners. See the discussion below.

Achieving a More Progressive Distribution of Costs and Benefits

Table C2 below displays a rough estimate of the distribution of costs and benefits of SCL's expanded conservation program. The total benefit and total cost figures are from Table 2 of SCL's Conservation Action Plan. The allocation of costs and benefits assumes that General Service customers pay 65% of total costs and enjoy 65% of total benefits; and that Residential customers pay 35% of total costs and enjoy 35% of total benefits.

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Table C2
Conservation Costs and Benefits
2008 Dollars (15-year NPV)

	Total	General Service Customers	Residential Customers
Benefits	$483,000,000	$314,000,000	$169,000,000
Costs	$363,000,000	$234,000,000	$129,000,000
Net Benefits	$120,000,000	$80,000,000	$40,000,000

Table C3 displays the distribution of conservation net benefits by income quintile based on the assumptions outlined in the notes to the table.

Table C3
Distribution of Conservation Program Net Benefits by Income Quintile
2008 Dollars (15-year NPV)

Bottom 20%	Second 20%	Middle 20%	Fourth 20%	Top 20%
$147/HH	$219/HH	$295/HH	$361/HH	$796/HH
8%	12%	16%	20%	44%

Notes: residential benefits are allocated on the basis of electricity consumption by income quintile; 50% of commercial benefits are passed along in the form of lower prices and allocated on the basis of total expenditure by income quintile; and 50% of commercial benefits accrue to property owners (stockholders and others) and are allocated on the basis of property income per income quintile. (Electricity consumption, total consumption, and property income by income quintile are from the Bureau of Labor Statistics, *2006 Survey of Consumer Expenditure*.)

The regressive distribution of net benefits produced by SCL's expanded conservation program should not be surprising. The program provides large subsidies to businesses and residential property owners because, for the most part, only property owners are in a position to make significant investments in conservation improvements. Some of the resulting conservation benefits will be passed along to consumers, but some will be retained in the form of increased property income.

One component of electric rate reform would involve a return to a classical marginal cost allocation policy, which, based on the last rate review, would shift about $12,000,000 from the Residential customer class to the Medium General Service, Large General Service, and High Demand customer classes. Table C4 displays the change in 15-year present value household *costs* (not benefits as in table C2 and C3) resulting from adoption of this cost allocation policy (using the same assumptions that are outlined in the notes to table C3 above).

Table C4
Return to Classical Marginal Cost Allocation
Change in Annual Household Costs by Income Quintile

Bottom 20%	Second 20%	Middle 20%	Fourth 20%	Top 20%
($138/HH)	($176/HH)	($107/HH)	($21/HH)	$442

Table C5 displays the distribution of net benefits after combining SCL's expanded conservation program with electric rate reform. The result is a much more progressive distribution of benefits.

Table C5
Distribution of Net Benefits with Conservation and Rate Reform

Bottom 20%	Second 20%	Middle 20%	Fourth 20%	Top 20%
$285/HH	$395/HH	$402/HH	$382/HH	$354/HH
16%	22%	22%	21%	19%

4/4/12

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Dear Seattle City Light Review Panel,

The Sierra Club supports smart strategic investments that will enable Seattle City Light (SCL) to provide superior service, increase affordability by promoting conservation, and address crucial environmental concerns.

The SCL Review Panel and the SCL staff are to be commended for their impressive work on the Strategic Plan. One of the great benefits of this plan and process is that it increases predictability for both power rates and SCL investments in the future. This predictability will be of value to the community, jobs, and the environment for years to come. The resulting analysis, documentation and recommendations are well researched, thoughtful and professional. I would also like to thank the panel members for the untold hours they have dedicated to this project.

As summarized in the draft Strategic Plan, it is clear that SCL faces significant challenges in the coming years. These include updating aging infrastructure dating back almost one hundred years, complying with necessary and beneficial environmental regulations, providing for increased capacity and dependability, and accelerating energy conservation actions, among others. There are also operational and business process challenges to overcome.

The Baseline scenario taken alone is not an acceptable option, as it perpetuates the past pattern of underinvestment in SCL. Operational inefficiency and running equipment to failure with the attendant cost overruns and inefficiencies are just some of the results of this kind of approach. Much of the 4.1% rate increase in the Baseline scenario is merely a response to increased debt obligations for already completed or committed projects.

We urge the Review Panel to recommend the Bolder Environmental Initiatives along with the Preferred Option to the City Council. We believe the Seattle community, which has been highly supportive of environmental efforts, will back you and the council in promoting these initiatives. The Sierra Club considers the following programs within the Bolder Environmental Initiatives particularly important:

- <u>Intensify Customer Energy Efficiency Goals ($15.8M):</u> Conservation is the most effective use of precious revenues for controlling energy use and lowering power bills for both industrial/commercial and residential customers. Seattle has an excellent track record in implementing conservation programs and this intensification deserves support.

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Washington State Chapter
180 Nickerson Street, Suite 202
Seattle, WA 98109
Phone: (206) 378-0114
Fax: (206) 378-0034
www.cascade.sierraclub.org

- Encourage Electricity for Appropriate Non-Vehicle Uses ($1 M): The Sierra Club has long been involved in working with the Port of Seattle to curb emissions from dirty diesel and marine fuels. Use of electricity in lieu of polluting, carbon intensive fuel is a win-win for both the environment and power efficiency.

- Accelerate PCB-Free Utility Initiative ($1M): We were shocked to learn that potential quantities of PCB residues are still lurking in transformers throughout the city, including transformers in residential neighborhoods. This is a public safety issue that should be promptly investigated and addressed.

- Provide Incentives for Customer PV Installations ($1.14M): Solar power, more than any other energy source, seems to capture the public's imagination. This relatively small investment should reap sizeable benefits in terms of public support for SCL's forward looking investments and environmental efforts.

Lastly, a word on rates: critics like to complain of increased rates, or more often about their specific electricity expenses, usually without reference to regional power rates. More context is in order: Seattle's rates are some of the lowest in the nation and among the lowest on the West Coast. Even in the Pacific Northwest, Seattle's rates have been approximately 25% lower than the average for many years. (page 12, Financial Forecast Overview & Financial Baseline, 2012, SCL).

In conclusion, the Sierra Club respectfully asks the Seattle City Light Review Panel to recommend the Preferred Option together with the Bolder Environmental Initiatives Path for consideration to City Council.

Sincerely,

Paul Zemtzov

Paul Zemtzov
Energy Committee
Sierra Club Washington State Chapter

From: Mark Huppert [Mark_Huppert@nthp.org]
Sent: Tuesday, April 10, 2012 12:42 PM
To: O'Brien, Mike; SCL_CLRPquestions
Cc: Denis Hayes
Subject: Comments on Seattle City Light 2013-2018 Strategic Plan

Dear Councilmember O'Brien and the Seattle City Light Review Panel,

We are grateful for the opportunity to comment on the Seattle City Light (SCL) draft 2013-2018 Strategic Plan. We applaud SCL for its history of providing affordable power to ratepayers, while at the same time achieving some of the most ambitious environmental goals in the nation. However, based upon our research of emerging technologies and legal structures, we believe that the planning team has an opportunity to continue this leadership position without raising rates as much as the 2013-2018 Strategic Plan contemplates. We urge the utility to explore, through a set of pilot projects, a new approach to energy conservation that meets the most ambitious goals set forth in the Plan.

Through the Preservation Green Lab located here in Seattle, the National Trust for Historic Preservation is currently working with the City to pioneer an Outcome Based Energy Code for existing buildings. This program provides design flexibility to historic buildings that meet ambitious energy targets and relies upon the following:

- accurately metered energy savings over time,
- statistical adjustments for weather and occupancy, and
- new contractual relationships between the utility, buildings and the planning department.

Our research indicates that the approach to energy conservation currently being pursued by the Bullitt Foundation for their headquarters in Seattle provides a transaction structure that encourages private investment in energy conservation, as if it were a perfectly demand-following energy resource. We hope to replicate this structure to attract private capital to energy efficiency investments, achieving much deeper energy savings in existing and historic buildings than currently possible. The result will be:

- vastly superior energy performance for older buildings, and
- measurable and persistent energy savings for SCL.

This new model for financing energy efficiency is not only necessary, but it is now possible through advanced metering technology from companies like Energy RM that combine International Performance Measurement and Verification Protocol (IPMVP) compliant statistical modeling with accurate measurement.

Successful pilot projects by Bullitt, the Preservation Green Lab and others will demonstrate that a utility no longer needs to expense conservation while simultaneously reducing their retail revenues. Using advanced metering technology and a Power Purchase Agreement, the utility can pay for Demand Energy just as it buys conventional power and sell it to the building owner at prevailing retail rates. This novel approach *supports the* ***2013-2018 Strategic Plan Priorities*** in the following areas:

- **Customer Value:** Investments in Demand Energy PPAs provide long-term, persistent energy savings that decrease the load throughout the distribution network. These energy savings can be paid for by SCL over time, rather than expensed up-front. They can be recovered from the building owner directly on the energy bill as an energy charge. *The result is a lower burden on the ratepayer for a better energy and environmental outcome.*
- **Asset Preservation:** Rather than paying up-front for estimated performance, a shift to Demand Energy PPAs assures that SCL only pays for actual savings that are achieved. Savings provide not only the benefits of I-937 compliance, but also real system benefits due to improved persistence. The savings achieved are the most

environmentally responsible benefits possible – permanent reduction of energy at the point of use. These savings are only possible through investment in new IPMVP compliant technology, and in the Demand Energy PPA structure this up-front investment is made by a private investor, not by SCL. *The result is an extremely stable and environmentally beneficial energy resource at a competitive cost.*

- **Municipal Enterprise Excellence:** Not only are investments in Demand Energy PPAs economically and environmentally attractive for SCL, they demonstrate Best In Class leadership by the utility in terms of business strategy, procurement and technology implementation. *By simultaneously reducing expenses and increasing retail revenue, the result is an immediate and lasting improvement of SCL's financial condition.*

SCL has an opportunity to tap the enormous energy resource that is hidden within existing buildings throughout its territory. It can do so without raising rates for ratepayers and in a way that sustains the financial and institutional health of the utility far into the future. We strongly encourage SCL to conduct a series of pilot projects that utilize Demand Energy at its earliest opportunity.

Regards,

Mark Huppert | Technical Director, Preservation Green Lab
National Trust for Historic Preservation | 1429 12th Avenue, Suite D, Seattle, WA 98122
Phone: 206.324.0397 | Mobile: 425.248.9467 | Email: Mark_Huppert@nthp.org

The Bullitt Foundation

1212 Minor Avenue, Seattle, Washington 98101-2825 • (206)343-0807 • fax (206) 343-0822
email info@bullitt.org | website www.bullitt.org

Comments on
Seattle City Light 2013-2018 Strategic Plan

(March 2012 Draft)

Denis Hayes, President
The Bullitt Foundation

April 10, 2012

We appreciate the opportunity to comment on the Seattle City Light (SCL) draft 2013-2018 Strategic Plan. SCL has long been a national leader in energy efficiency and renewable energy and we applaud the utility and the planning team for its hard work and creativity in the creation of the draft plan. We believe SCL has the opportunity to capture many of the energy and environmental benefits articulated in the more aggressive plans, without raising rates as much as those plans contemplate. We urge the utility to explore, through a set of pilot projects, a new transaction approach to meet those goals.

We All Know More Than We Used To

Recent significant advancements in building science and software have created a huge new opportunity for SCL. These advances allow SCL to enable, and then benefit from, deep energy retrofit of commercial buildings. Those deep savings can now be:

1) accurately metered over the *long-term*,
2) adjusted for weather and tenant occupancy, and
3) delivered to the utility just like traditional energy generation.

In addition, these deep energy savings can be harvested in SCL's service territory *without* raising rates for SCL customers and without exposing the utility to additional risk.

We recommend that SCL support several pilot projects in the near future to test the benefits, and explore the challenges, of this approach, which we call Demand Energy. This approach offers substantial benefits to SCL, its ratepayers and the environment.

Definition: Demand Energy is measured energy yield from investments in increased efficiency, delivered to utilities from customer premises.

Other Characteristics

1. **Metered**: Demand Energy is *metered*, using an IPMVP compliant meter system that meets utility standards.[1]
2. **Bought:** Like any other energy supply, utilities can either buy metered Demand Energy units (kWh, therms, etc) under long-term power purchase agreements (PPAs) with Independent Power Producers, or they can develop and own Demand Energy generation installations.
3. **Sold**: Like other energy, utilities sell metered Demand Energy units to their customers at retail rates, under utility tariffs.
4. **Accountable**: Metered Demand Energy units are purchased (and resold) only as delivered.
5. **Customer Billing**: Demand Energy is delivered to the utility, *not* the building. Therefore, during the term of the PPA, the utility bills the building for the same number of energy "units" the building would have consumed without the Demand Energy installation.[2] The building's total bill for energy services does not go down.[3]
6. **Ratepayer Benefit**: Because the utility sells the metered Demand Energy units to the building, this approach avoids the "rate inflation" typically associated with other conservation or efficiency programs.[4]
7. **Energy Finance Benefit:** Demand Energy projects will qualify for classic energy finance structures based on investment grade financing backed by the Demand Energy PPA.[5] This structure will enable low-interest, long-term financing previously unavailable to finance customer-side efficiencies.
8. **Building Owner Benefits:** Demand Energy retrofits do not require any investment by the building owner. The building owner experiences an upgraded building at no direct cost. Moreover, the owner receives a portion of PPA revenues as "rent" for use of the building.[6]
9. **Deeper, More Persistent Savings:** The utility receives all of the benefits and value it receives under current EE programs.[7] In addition, the utility also receives the *retail value* for the Demand Energy it sells. This added value, together with the long-term power purchase agreement, allows for much deeper retrofits, i.e., installation of measures with significantly longer payback periods than with traditional EE programs. The transaction structure inherently incents and aligns all participants behind persistent[8], deep savings.

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[1] *International Performance Measurement and Verification Protocol.* The Demand Energy meter will send data to the utility under standard Automated Meter Reading protocols, like a standard electric meter.

[2] *Under commission-approved PPAs and tariffs (to be obtained).*

[3] The Demand Energy installation causes a reduction in the number of energy units measured by the customer's traditional energy meter. However the Demand Energy units do not belong to the customer, they are being delivered to the utility. To properly bill the customer the utility reads the monthly Demand Energy automated meter reading and adjusts the other monthly energy meter readings from the customer premises. In most cases, the Demand Energy meter reading is simply *added* to the customer's other monthly utility meter readings. This brings the customer's total energy bill back to what it would have been prior to the Demand Energy installation.

[4] Traditionally, when ratepayers fund energy efficiency measures, the utility is left with fewer energy units to sell. With the same fixed costs, the utility must raise the price of all remaining units in the system to cover those fixed costs, which raises rates for all affected ratepayers. Demand Energy does not reduce the number of energy units in the system, but rather delivers those energy units to the utility for sale to its customers. Demand Energy does not affect rates any differently than any other energy supply source.

[5] Under the traditional energy efficiency "incentive plus net metering structure" retrofits are financed either by the building owner or by third parties, based on the building owner's ability to share the savings with the third party. This results in a focus on shorter-term payback periods, leading to shallower retrofits.

[6] This mirrors the relationship between a wind energy developer and a landowner.

[7] These values include the very strong load following and peak reduction characteristics of EE as well as the any transmission and distribution benefits.

[8] Because the owner of the Demand Energy project is paid for delivered units, continuous commissioning is a high priority.

In its draft plan, Seattle City Light (SCL) lists four priority areas and associated objectives for the utility. Those are:

Figure 1: Seattle City Light's Priorities & Objectives

Priority	Objectives
Customer Value	• Provide more rate stability and predictability • Anticipate and exceed customer service expectations • Promote environmental stewardship
Workforce Investments	• Ensure a safe work environment • Attract, train and retain a high-performance workforce
Asset Preservation	• Provide reliable, safe, cost-effective electric service to our customers • Maintain stable, cost-effective, environmentally responsible power supply portfolio • Incorporate technology to meet future customer needs
Municipal Enterprise Excellence	• Improve communication about City Light's strategic priorities • Enhance cost competitiveness and accountability in procurement of all services • Implement best practices in business processes and technology across the enterprise • Ensure fiscal strength

We believe the Demand Energy approach offers benefits in each of SCL's priority areas. For the sake of clarity, we will address them in order.

Figure 1: Seattle City Light's Priorities & Objectives

Priority	Objectives
Customer Value	• Provide more rate stability and predictability • Anticipate and exceed customer service expectations • Promote environmental stewardship

Customer Value and Demand Energy

Rate Stability: It is well known that EE improvements enhance rate stability and predictability when compared to buying energy on the open market or from utility-owned fossil fuel generation, which is subject to fuel price fluctuation.
Demand Energy allows SCL to harvest much deeper energy savings in commercial buildings than the utility's current practices support. Therefore, Demand Energy provides more rate stability and predictability than either existing EE programs or other energy supplies.

In addition, Demand Energy solves the "rate inflation" typically associated with other conservation or efficiency programs.[9] This allows SCL to obtain deep energy savings in buildings without raising rates for other customers.

[9] Traditionally, when ratepayers fund energy efficiency measures, the utility is left with fewer energy units to sell. With the same fixed costs, the utility must raise the price of all remaining units in the system to cover those fixed costs, which raises rates for all affected ratepayers. Demand Energy does not reduce the number of energy units in the system, but rather delivers those energy units to the utility for sale to its customers. Demand Energy does not affect rates any differently than any other energy supply source.

Customer Benefit: Demand Energy's deeper and more extensive improvements to buildings benefit both building owners and tenants. The value of Seattle's commercial real estate increases (as does building quality) and tenants in those buildings enjoy more comfortable and productive workplaces.

Environmental Stewardship: Demand Energy goes deeper into buildings than traditional EE programs, providing significantly better environmental performance than either existing programs or other energy supplies.

Figure 1: Seattle City Light's Priorities & Objectives

Priority	Objectives
Workforce Investments	• Ensure a safe work environment • Attract, train and retain a high-performance workforce

Workforce Enhancement and Demand Energy

Demand Energy is based on benchmarking and advanced building science. Both are part of the next wave of smart buildings. Demand Energy will help SCL:

1) understand these new technologies,
2) attract the next generation of workers who are interested in new technology and
3) help prepare SCL employees for the future.

Figure 1: Seattle City Light's Priorities & Objectives

Priority	Objectives
Asset Preservation	• Provide reliable, safe, cost-effective electric service to our customers • Maintain stable, cost-effective, environmentally responsible power supply portfolio • Incorporate technology to meet future customer needs

Asset Preservation and Demand Energy

Reliable, Safe, and Cost-Effective Electric Service: Demand Energy is the most reliable, safe and cost-effective electric supply SCL could acquire. Demand Energy is based on lowering building energy loads, and is therefore, a highly load-following resource. Demand Energy, unlike traditional EE, requires ongoing commissioning, measurement and verification[10], adding to its persistence and reliability. Unlike traditional EE, Demand Energy does not require upfront contributions from the utility; it requires only that the utility pay for *delivered, measured* energy savings as those savings occur in the future.

Environmentally Responsible Power Supply: Demand Energy is the most environmentally responsible supply alternative for SCL. Not only does it offer all of the

[10] because the party under contract to deliver the savings to SCL is only paid if the metered savings is delivered.

traditional environmental benefits of energy efficiency, but rather than leaving the majority of the potential energy savings stranded in the buildings, Demand Energy captures all of the cost-effective savings over the length of the Demand Energy power purchase agreement. This ensures that from a utility energy supply perspective, the building is operating with the smallest energy footprint possible over the 20-year length of the Demand Energy power purchase agreement.

Technology to Meet Future Customer Needs: Demand Energy is based on benchmarking and advanced building science. SCL can help its customers use and benefit from this next wave of smart building technologies.

Figure 1: Seattle City Light's Priorities & Objectives

Priority	Objectives
Municipal Enterprise Excellence	• Improve communication about City Light's strategic priorities • Enhance cost competitiveness and accountability in procurement of all services • Implement best practices in business processes and technology across the enterprise • Ensure fiscal strength

Municipal Enterprise Excellence and Demand Energy

Cost Competitiveness and Accountability in Procurement: Demand Energy is based on long-term utility payments for *metered, delivered* energy savings. Savings are not deemed up front and savings are not paid for upfront. This ensures that SCL is paying for only the EE savings it actually procures. Demand Energy transactions can be negotiated by the utility based on the *actual* value the utility receives from the savings, ensuring cost-competitive acquisition of such savings.

Ensuring Fiscal Strength: Demand Energy solves the "rates" problem, allowing SCL to acquire EE without raising rates for other customers. This is the essential "aha" benefit for the utility. Traditionally, when ratepayers fund energy efficiency measures, the utility is left with fewer energy units to sell. With the same fixed costs, the utility must raise the price of all remaining units in the system to cover those fixed costs. This raises rates for all affected ratepayers. Demand Energy does not reduce the number of energy units in the system, but rather delivers those energy units to the utility for sale to its customers. Demand Energy does not affect rates any differently than any other energy supply source.

Conclusion

SCL has a tremendous opportunity to harvest the energy waste in the commercial buildings in its service territory. The utility can do so without raising rates for other ratepayers and without increasing risk for the utility. We urge SCL to explore a series of pilot projects at its earliest opportunity.

From: SCL_CLRPquestions
Sent: Wednesday, April 18, 2012 11:23 AM
To: Greg Hill
Subject: RE: Electric Rate Reform

Dear Mr. Hill,

Thank you very much for your input. We will consider it along with other comments and proposals as we develop 2013-2014 rates.

Seattle City Light Review Panel
c/o K. Kinney Seattle City Light
P.O. Box 34023 Seattle WA 98124-4023
CLRPquestions@seattle.gov

May 1, 2012

Mr. Denis Hayes
The Bullitt Foundation
1212 Minor Avenue
Seattle Washington 98101-2825

Dear Mr. Hayes:

On behalf of the City Light Review Panel, thank you for your thoughtful submittal regarding Demand Energy and the City Light Strategic Plan. Over the course of two phases of public outreach relating to the Plan, we heard considerable input from stakeholders, particularly those in the environmental community, encouraging the Utility to expand upon the range of options it offers to secure energy efficiency and conservation investments. After consideration of all the information before us, we have recommended the Preferred Path to the Mayor and Council, which includes an effort to broaden methods for securing energy efficiency and conservation.

Thank you for taking time to share your perspectives with us.

Sincerely,

Stan Price	Eugene Wasserman
Co-Chair	Co-Chair

cc: Hon. Michael O'Brien, Seattle City Councilmember
Jorge Carrasco, Superintendent, City Light

Seattle City Light Review Panel
c/o K. Kinney Seattle City Light
P.O. Box 34023 Seattle WA 98124-4023
CLRPquestions@seattle.gov

May 1, 2012

Mr. Mark Huppert
Technical Director
Preservation Green Lab
1429 12th Avenue Suite D
Seattle, WA 98122

Dear Mr. Huppert:

On behalf of the City Light Review Panel, thank you for your letter regarding Demand Energy and the work of the Preservation Green Lab. Over the course of two phases of public outreach relating to the Plan, we heard considerable input from stakeholders, particularly those in the environmental community, encouraging the Utility to expand upon the range of options it offers to secure energy efficiency and conservation investments. After consideration of all the information before us, we have recommended the Preferred Path to the Mayor and Council, which includes an effort to broaden methods for securing energy efficiency and conservation.

Thank you for taking time to share your perspectives with us.

Sincerely,

Eugene C Wasserman

Stan Price
Co-Chair

Eugene Wasserman
Co-Chair

cc: Hon. Michael O'Brien, Seattle City Councilmember
Jorge Carrasco, Superintendent, City Light

Seattle City Light Review Panel
c/o K. Kinney Seattle City Light
P.O. Box 34023 Seattle WA 98124-4023
CLRPquestions@seattle.gov

May 1, 2012

The Manufacturing Industrial Council
c/o Energy Strategies
215 South State Street Suite 200
Salt Lake City, UT 84111

Dear Sir/Madame:

On behalf of the City Light Review Panel, thank you for your memorandum commenting on the City Light proposed Strategic Plan. Matt Lyons on the Panel has shared similar concerns with us about the issues you identified in your letter. We have deliberated at length on the elements of the City Light Strategic Plan. After consideration of the information before us and listening to the many stakeholders who have provided comment on the Strategic Plan, we have recommended the Preferred Path to the Mayor and Council.

Thank you for taking time to share your perspectives with us.

Sincerely,

Stan Price
Co-Chair

Eugene Wasserman
Co-Chair

cc: Hon. Michael O'Brien, Seattle City Councilmember
Jorge Carrasco, Superintendent, City Light

Seattle City Light Review Panel
c/o K. Kinney Seattle City Light
P.O. Box 34023 Seattle WA 98124-4023
CLRPquestions@seattle.gov

May 1, 2012

Mr. Paul Zemtzov
Sierra Club
Washington State Chapter
180 Nickerson Street, Suite 202
Seattle, WA 98109

Dear Mr. Zemtzov:

On behalf of the City Light Review Panel, thank you for your thoughtful letter regarding the City Light Strategic Plan. We share your view that remaining with the Baseline scenario alone is not the best option, and agree that there worthy proposals in the Bolder Environmental Initiatives Path. After consideration of all the information before us, we have recommended the Preferred Path to the Mayor and Council.

Thank you for taking time to share your perspectives with us.

Sincerely,

Eugene C Wasserman

Stan Price
Co-Chair

Eugene Wasserman
Co-Chair

cc: Hon. Michael O'Brien, Seattle City Councilmember
Jorge Carrasco, Superintendent, City Light